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TRACE ELEMENTS IN LIVING ORGANISMS - AISETOV

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Department of Veterinary Medical Sciences DIMEVET
***Alma Mater Studiorum*, University of Bologna**

The role of trace elements in health: from healthy environments to healthy living organisms

ABSTRACT BOOK

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P-16. Food contamination from the food packaging metals aluminum and tin: estimation of their dietary exposure in an Italian adult community

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Background and aim: Aluminum and tin are metals widely used by humans as food packaging material and in the general population the dietary intake it one of the most common source of exposure. The concentration in foods is variable and depends on the original food content and to through contamination from food packaging containers and cookware. High metal exposure and in particular to aluminum has been suggested to play a role in the neuronal toxicity leading to Alzheimer's Dementia. This study aims at estimating the aluminum and tin dietary intake of an Italian adult population.
Methods: Food consumption data were retrieved through administration of a validated semi-quantitative food frequency questionnaire in a representative sample population of Northern Italy. We collected a pooled sample of food composing their diet in order to measure aluminum and tin concentration by inductively coupled plasma mass spectrometry and we eventually estimated their dietary intake combining dietary habits with metal measurements in food.
Results: We collected a pooled sample of 908 foods. The highest levels were found for aluminum in sweets, cereals and vegetables, and for tin in sweets, meats, fish and seafood. The median estimated daily dietary intake of aluminum was 6133.5 μg/day (Interquartile range - IQR: 3903.3 - 18.231.1 μg/day), with major contribution from beverages and vegetables, followed by cereals. For tin, we estimated a median intake of 68.1 μg/day (IQR: 47.7-94.5 μg/day) with major contribution from vegetables and fruits, followed by meat and dairy products.
Discussion: Our results provide an estimation of dietary intake of aluminum and tin in an Italian community of Northern Italy, since the estimation are based on metals measurements in foods actually consumed by the population under investigation. Finally, the use of a validated food frequency questionnaire in assessing food consumption pattern data improved the accuracy of our updated results.

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